

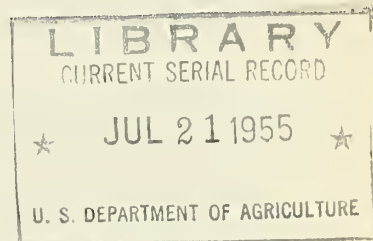
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JULY 1955

MARKETING ACTIVITIES



U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Washington 25, D.C.

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MARKETING ACTIVITIES

Vol. 18

No. 7

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Agriculture
Washington 25, D. C.

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A monthly publication of the United States Department of Agriculture, Washington, D. C. The printing of this publication has been approved by the Director of the Bureau of the Budget (March 24, 1953). Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at a subscription price of \$1.50 a year (domestic), \$2.00 a year (foreign), payable by check or money order. Single copies are 15 cents each.

Broader Markets For Dairy Products

By Robert M. Walsh and Walter F. Thompson

Market expansion research of the U. S. Department of Agriculture is a broad field of work. Unlike a spot study for a particular company's product, the Department's interests are in broader markets for commodities and commodity groups as a whole, their importance to producers, and to the general farm economy. And, particular consideration is given to commodities in large, or even "surplus", supply.

A case in point is the work being done on dairy products by the Market Development Branch of the Agricultural Marketing Service. This Branch, as its name implies, carries out the market expansion research of AMS. It works with such tools as consumer surveys, retail merchandising studies, tests of market potentials for new products, and the assembly and evaluation of basic information on the distribution of farm products. Most of these tools are being used in general and specific studies looking to increased consumption of dairy products.

Basic Research

In the general research field, the Branch is participating with other agencies of the Department in a national family food consumption survey - now under way - which will yield valuable information on food consumption patterns by major regions, by population density, by income groups and other family characteristics. Consumption patterns for dairy products will become more obvious as a result of this survey.

The Branch also is collaborating with the Food Distribution Division, AMS, in experiments in connection with the Special School Milk Program -- testing various devices for increasing consumption of fluid milk among school children. Through their Departments of Education, a number of States are participating in projects to determine the effects on consumption of milk in schools of milk prices, use of automatic vending machines, new times of serving milk, the relationship between school milk and home milk consumption, use of 1/3 quart containers, handling practices and temperature of milk, use of flavored whole milk, and availability factors in remote areas. The experiments also cover, in one State, the reasons for non-participation in the program by some schools.

Other dairy products research of the Branch at present is directed at three specific projects: (1) A continuing study of consumer purchases of certain dairy products and margarine; (2) experimental work in methods of merchandising butter and cheese, and (3) a study of the effect of increased availability of milk, particularly through vending machines, on increasing consumption.

Over the last 18 months this comprehensive program of research has been carried on in cooperation with several dairy industry organizations. The consumer purchase study is financed jointly by the Department and by the dairy industry. It provides a series of reports on household purchases of butter, cheese, nonfat dry milk solids, and margarine. These data are designed to assist the industry and the Department in learning who consumes dairy products and at what rate. The continuing nature of this information, which indicates changes in the market for dairy products as they take place, is helping the dairy industry in carrying out promotional and advertising campaigns designed to increase consumption of dairy products. Here, briefly, are some highlights of this study:

Butter, Margarine and Cheese

Household purchases of butter moved up following a drop in retail prices on April 1, 1954, along with the beginning of a more intensive and widespread promotional campaign by the industry. For the dairy marketing year April 1954-March 1955, householders reported buying 13 percent more butter than a year earlier. The increase in butter purchases in the 6 months immediately following the drop in prices came about through families buying more frequently and making larger purchases. Since October 1954, the gain in purchases over a year earlier has been strengthened by additional families entering the market for butter. Data for April and May 1955 indicate that household purchases of butter were still above a year earlier--about 7 percent.

How did household purchases of margarine fare during this period? Following the drop in butter prices, there was some falling off in household purchases of margarine. However, as was reported for butter, there has been a strengthening in the market for margarine since October 1954, with a reported increase in the percentage of all families buying. Over the 12-month period April 1954-March 1955, margarine purchases were reported 3 percent larger than a year earlier. In April-May 1955 they were 10 percent larger than in the corresponding months last year.

Information developed by the study on natural, processed, and cottage cheese indicates that cottage cheese purchases are an important segment of the household purchase pattern for cheese and should not be neglected in promotional activities. On a purchased weight basis the quantity of cottage cheese is about two-thirds as great as the quantity of all other cheese purchased. The data on cheese purchases to date show that householders in April-May 1955 bought more natural cheese, about the same amount of cottage cheese, and less processed cheese than a year earlier.

For nonfat dry milk solids, the study shows that with the introduction of the new "instant" product, there apparently has been a significant gain in household purchases of that commodity. Data for the first 5 months of 1955 indicated a monthly sales level of 12 to 13 million pounds compared with 9 to 11 million pounds in the April-December 1954 period. For April-May 1955, household purchases of nonfat dry milk solids were reported over 20 percent greater than in April-May 1954.

This is but a small part of the information available in the

published reports on household purchases of dairy products. Quarterly reports in this series give breakdowns by regions and type of retail sales outlet. As an example, household cottage cheese purchases per capita on the West Coast were reported about double the United States average. However, prices for cottage cheese were reported about the same regardless of region. This indicates that on the West Coast, aggressive merchandising policies as well as more attention to product quality, are paying off in increased sales.

Household purchase data related to family characteristics, published in an annual report in this series, indicate that families with housewives 45 years old and over not only used more butter than families with younger housewives, but more margarine. These data also show that the decline in the use of butter from 1947 to 1954 was greater in households with housewives under 45 years of age than for families of older housewives; suggesting that intensified promotional and educational efforts to increase use of butter might be directed at younger housewives.

Retail Studies

In the field of retail merchandising there are two studies under way. One deals with butter, the other with cheese. In the case of cheese it is felt that increased knowledge of consumer buying practices will lead to greater sales of the product. For butter, the lack of aggressive and up-to-date merchandising methods may have been responsible for part of the decline in the consumption of butter in the earlier postwar years. These studies are being made in cooperation with a national chain of retail groceries in Cleveland, Ohio, and Pittsburgh, Pennsylvania.

Because the work was only recently initiated, research results are not available at this time. Briefly, alternate methods of merchandising butter and cheese are being evaluated by measuring comparative consumer purchases using applications of rotational-type design to eliminate time and store differences. The cheese merchandising experiment is designed to study three factors: In-store versus point-of-production packaging (to study effect of such packaging on the outward appearance of cheese); size of package; and formal display versus jumbled display. The experiment is confined to mild and sharp natural cheddar cheese. Within each store, amount of allocated space, number of varieties, and space devoted to each variety will remain relatively constant throughout the experiment. The butter merchandising project is designed to study several variable merchandising methods which include: Location of butter in the dairy case, the quantity of butter in the dairy case, and lastly the kind of package --pictorial versus nonpictorial.

A study also is being made of the effect of increased availability of milk on consumption. In cooperation with the American Dairy Association, efforts will be made to determine some of the factors that influence consumption which are related to the availability of milk. This study has as its objective an evaluation of the effect of the use of retail vending machines, one facet of availability, on the total sales of fluid milk in selected areas. It should indicate whether the use of vending machines results in an increase in the total sales of milk in the market area, or

merely results in a switch from established outlets to the machines. It will also be helpful in indicating the kinds of locations which offer the greatest potential for increasing sales of milk, that is, factories, office buildings, apartment buildings, or outdoor locations. In addition, it is hoped that information will be obtained as to the most popular size container for use in vending machines in various locations - $\frac{1}{2}$ pint, $\frac{1}{3}$ quart, pint, quart, or multiple-quart containers.

Vending Machine Study to Begin

The first phase of this research - a study of milk vending machines in industrial plants is expected to get underway in one or two markets in the near future.

Meanwhile, the problems encountered in doing the spade work for the study revealed some information which should prove valuable to operators who are considering the possibility of investing in or supplying milk vending machines in industrial plants.

In setting up this study, considerable difficulty was encountered in finding industrial locations. There also was some lack of interest on the part of milk distributors - mostly those who had tried vending machines and had experienced difficulty in servicing and maintaining them and others who doubted that such outlets would increase sales.

Opposition to Vending Machines

Plant management has shown some resistance to the installation of the machines. Generally, this seemed to be based on unfavorable past experience with this type of merchandising. Unsatisfactory servicing and resulting unsanitary condition, increased "time-killing," broken bottles, and the use of slugs in machines were typical of complaints of plant managers. In the larger factories, outside hot-meal catering organizations objected to the potential threat to their sales offered by vending machines. Production line arrangements often prevented workers from leaving their benches to use the machines. Several concerns opposed vending machines of any kind, while others claimed that their workers did not want milk. Some had carefully surveyed their workers' preferences for drinks and found little or no interest in milk. Coffee was preferred and, as a result, the floor space available was allotted to coffee-vending machines. In some instances, management furnished workers free coffee, a deterrent to the purchase of other beverages.

Positive Guides to Introduction of Milk Vending Machines

Of major importance to those considering installing machines at industrial locations is the fact that they are going to have to do an excellent selling job to persuade management to permit it. This will include answering questions concerning the percentage of profit from sales available to the plant or the employee welfare fund, whether employees consider milk a refreshing drink and want it, assurance that machines will be serviced regularly and that satisfactory sanitary standards will be maintained, and assurance the machines are tamper-free.

Bag Closure Costs Compared

By Paul Shaffer and Dale Anderson

With the growth of produce prepackaging in retail food stores increasing use is being made of transparent film bags. To insure that the original weight or number of units is maintained, the filled bags must be securely closed. Several methods of making these closures are currently in use in the food trades. (See illustrations, next page.)

A recent study conducted by the Transportation and Facilities Branch of the Agricultural Marketing Service revealed that the combined labor and materials costs for the six illustrated methods of closing the bags varied from 0.26 to 0.57 cents per bag, with most of the difference due to the cost of the materials used. Except for one method, there was very little difference in the amount of labor required to perform the work. (See table at end of article.)

Generally, the sole function of the devices used to close transparent film type bags is to seal in the contents. However, some types of closing devices also are used for price marking the bagged unit. Since most bags now are printed with a spot for the weight and price, there is little advantage to be gained from using the closure for the price mark. In each of the 6 bag closing methods studied, the operation consisted of: (1) twisting (or folding) the neck of the bag; (2) affixing the closing device, and (3) placing the filled bag in a master container.

Types of Closures Studied

In method "A" a pressure sensitive tape in a dispenser was used and two steps were involved: The twisted neck of the bag was positioned on the tape and depressed into the jaw of the machine which sealed the tape about the neck of the bag. It was removed from the jaw and the tape was cut off on a serrated blade. This machine dispenses tape either $\frac{1}{2}$ " or $\frac{3}{8}$ " wide (figure 1). Best results were obtained with $\frac{3}{8}$ " wide tape.

In method "B" the twisted neck of the bag was inserted in the jaw of a jaw-type hand stapler and a staple placed around the bag (figure 2).

In method "C" the neck of the bag was twisted and closed by a wire enclosed tape which was wrapped around the bag and twisted tight (figure 3). The ends of the tape were then bent back. The tape is either plastic or paper (in different lengths) with a wire imbedded in the material. In this study 4" plastic and approximately 5" paper tapes were used. There was no appreciable difference in time requirements. (The material costs in the table are based on the paper type tapes.)



Figure 1.--Method A: Twisted neck of bag is placed on tape and depressed in slot in front of dispenser.



Figure 2.--Method B: Twisted neck of bag is closed with jaw-type stapler.



Figure 3.--Method C: Twisted neck of bag is closed with twist of tape that has wire imbedded in it.



Figure 4.--Method D: Twisted neck of bag is closed with metal clip compressed by fingers.



Figure 5.--Method E: Twisted neck of bag is closed with plastic tag that snaps on.



Figure 6.--Method F: Folded neck of bag is stapled together with a price tag on top.

In method "D" a small metal clip was placed around the twisted neck of the bag and compressed tight by the thumb and forefinger (figure 4).

In method "E" a plastic tag approximately $3\frac{3}{4}$ " by $1\frac{1}{4}$ " with a slotted opening was snapped on the twisted neck of the bag (figure 5). This tag is large enough that the package price can be stamped or written on it.

In method "F" the top of the bag was folded over, and a 2" by 4" price tag was placed over the fold and attached with a conventional desk or hand stapler (figure 6). The price tag identifies the commodity, its weight, code, and price.

There is very little difference in the labor requirements for all methods other than "F". The size of the bag or the length of the neck has a greater effect on labor requirements than the type of closure. In several tests in which undersize bags were used, from 40 to 58 percent more labor was required to twist, close, and dispose of the bag than when the proper size bag was used (approximately 2 inches of bag above the closure). Furthermore, when the neck of the bag is too short, the chances of the closure coming loose are increased.

Labor and materials cost comparison for 6 types of closures for polyethylene type bags

Type of Closure

	Without price tag				:	With price tag	
	A	B	C	D	:	E	F
	Pressure Sensitive Tape	Staple	Wire Enclosed Tape	Metal Clip	:	Plastic Clip	Staple and Tag
Labor @ \$1.20 hr.	.208	.248	.286	.234	:	.250	.550
Materials $\frac{1}{2}$.050	.047	.079	.200	:	.197	.018
Total cost in cents per bag	.258	.295	.365	.434	:	.447	.568

$\frac{1}{2}$ / Basis of Material Costs:

A @ \$0.43 per 60 yds and $2\frac{1}{2}$ " per bag

B @ \$2.36 per 5000 box in 80 box lots

C @ \$15.75 per 5000 and 5" per bag

D @ \$2.00 per 1000 in 100 m lots

E @ \$1.97 per 1000 in 1000 m lots

F @ \$0.43 per 5000 in quantity lots - 2 per bag

Pear Package Presents Problems

By Donald R. Stokes

Cooperative efforts of the Agricultural Marketing Service, USDA, and the Oregon-Washington-California Pear Bureau to develop an improved shipping container for winter pears will be continued during this year's marketing season.

Packaging research specialists of the Transportation and Facilities Branch, AMS, have worked on the project in cooperation with the Pear Bureau over the past two seasons. Numerous problems have arisen - some have been solved and some remain to be solved.

During the 1953-54 marketing season, pears were shipped in 5 types of experimental fiberboard boxes: (1) Double-wall; (2) single-wall with a full liner; (3) single-wall with a U-liner on two sides and bottom; (4) single-wall with double-wall liner on 4 sides and bottom; and (5) single-wall with cell dividers.

Advantages and Disadvantages of Fiberboard Containers

The outstanding advantage found for these experimental containers was that wholesalers and retailers who purchased pears packed in them were favorably impressed with the reduction in bruise damage from that normally found in standard wood boxes. However, they had several disadvantages: Inadequate stacking and trucking capabilities, slackness of pack upon arrival in eastern markets, and general unattractiveness due to scuffing, poor labeling, and printing. These factors were believed to have been chiefly responsible for auction market buyers generally discounting pears packed in experimental containers that season. This frequently occurs with the introduction of new containers until the fruit trade becomes more familiar with their advantages and disadvantages through experience.

In the 1954-55 marketing season, two new experimental containers were designed by cooperating container manufacturers which appeared to solve the chief problems found during the earlier tests. More sturdily designed than those tested in 1954, the 1955 experimental containers also were attractively printed and labeled and they were overpacked to eliminate slackness as the fruit settled in them. But, a new and more serious problem arose - excessive discoloration and pressure bruising - particularly in one of them which was $\frac{3}{4}$ inch shallower in depth than previously tested containers. This container, selected by the Pear Bureau's Research Committee as the primary one to be tested during 1954-55, was a full telescope box, $18 \times 11\frac{1}{2} \times 9\frac{1}{2}$ inches inside (Figure 1). The material



Figure 1.-A 2-piece full telescope experimental container tested for winter pears during the 1954-55 season

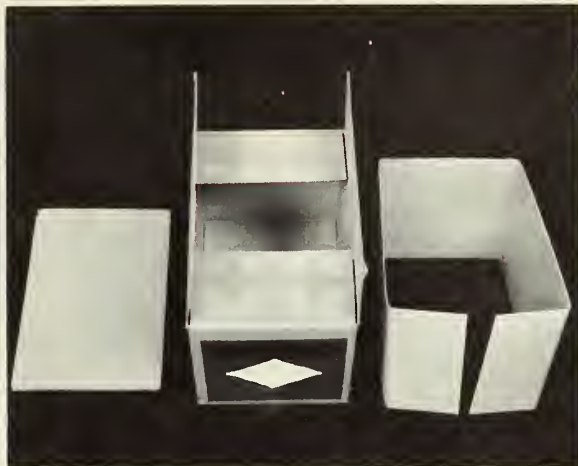


Figure 2.-A regular slotted carton experimental container with bottom pad and veneer liner for ends and sides.

was double-faced corrugated board of 275 pounds bursting test strength. It consisted of 2 liners, one glued with moisture resistant adhesive to either side of a corrugated sheet. Assembled, the bottom of the container is of single thickness and the ends and sides are of triple thickness. The full depth telescope cover has top and end walls of double thickness and side walls of single thickness. The container was exceptionally sturdy and no container failure was observed during the tests.

One of the 4 packing plants participating in the tests packed 3 carloads of pears in another experimental container (Figure 2): A regular slotted carton with a bottom pad and veneer liner for the ends and sides. Inside dimensions were $18 \times 11\frac{1}{2} \times 10\frac{1}{4}$ inches, giving $\frac{3}{4}$ inches greater depth than the full telescope container. The box and pad were of 275-pound test waterproof corrugated board. The liner was $\frac{1}{8}$ wood veneer with kraft paper applied on both sides with waterproofed adhesive.

The experimental containers were evaluated by shipping a minimum of three full stacks of either one of them in the same car with comparable pears packed in standard wood boxes. A total of 36 of these test shipments, 31 tests of the 2-piece full telescope container and 5 tests of the regular slotted container, was inspected by official inspectors of the Federal Fresh Fruit and Vegetable Inspection Service. Some results of these tests and recommendations for further research to clear up some of the problems encountered are discussed in the following conclusions:

(1) Excessive discoloration and bruising were found in the pears packed in the full telescope container. Although only a limited number of test shipments were made, less discoloration and less bruising were found in pears packed and shipped in the regular slotted carton with wood-veneer kraft paper liner. However, it is not known whether the difference in the construction of the experimental containers or the difference in their dimensions accounted for the variation in the amount of bruising and discoloration of fruit shipped in them. Dimensions of the boxes probably were the most important factor, but this problem needs additional research.



Figure 3-A 2-piece full telescope container used for winter pears with top telescope cover removed-note indentations in the top telescope cover by excessive pressure of the pears against the top of the box. This box is stacked upside down



Figure 4.-A top layer of pears packed in full telescope container showing considerable slight bruising and discoloration

(2) Both of the experimental containers appeared exceptionally sturdy and no container failure was observed in the inspection at terminal markets. The condition of the full telescope experimental containers and their general ability to stack appeared equally as satisfactory in March 1955, after the containers had been held in cold storage for several months, as they were in November 1954.

(3) The possibility of reducing fruit discoloration by changing the dimensions of the fiberboard containers and/or by coating the inside of them with some material, such as a polyethylene resin or wax, or some similar treatment, would appear to be worthy of investigation. In three test shipments observed, pears in polyethylene bags were packed in the experimental containers. Compared with pears in other test shipments, those in the polyethylene bags had much less discoloration, averaging only 3.7 percent, although the same degree of pressure bruising was found in all tests.

(4) Inasmuch as excessive skin discoloration and pressure bruising were found in most of the full telescope fiberboard boxes, information or conclusions with respect to trade acceptance of such containers would have little value. Therefore it would seem desirable to modify and improve the experimental containers before forming definite conclusions on trade acceptance and salability of the pears packed in the new containers.



Figure 5.-A second layer of pears packed in full telescope container showing practically no slight bruising or discoloration

Special School Milk Program Improved

By Philip Fleming

The special School Milk Program has been modified -- to make it even more effective next year in expanding the market for milk in schools.

The program was introduced in September of last year, **MARKETING ACTIVITIES** readers will remember. A story in the October 1954 issue announced details of the program, and a report on its progress was made in the January issue, this year.

No final report on the program's first year can yet be given. That's because assembly of reports is necessarily slow from the more than 47,000 schools now approved for participation in the program.

But this much is sure:

Because of the program, school children during the past school year drank well over 400 million additional half-pints of milk.

That is "substantial progress", as Acting Secretary of Agriculture True D. Morse described it, when he announced the modifications. It's especially impressive, in view of the fact that the program could not be started last year until after schools had already opened -- and there was inevitable delay in getting forms printed, contracts signed, etc.

Why, then, change a program that has done so well in its first year?

That action was taken because Department of Agriculture officials saw in the program the promise of an even greater potential for good.

Administrators of the program, in the Department's Agricultural Marketing Service, have been keenly observing its operation. They noted what they believed to be certain opportunities for improvement in it -- to make it even more effective in increasing the consumption of milk by children in schools.

To gain full discussion of operating experience during the school year, a conference was held in May with the School Lunch Advisors to the Secretary of Agriculture, and representatives of the dairy industry -- the same group of men and women who gave counsel a year ago to the Department in starting the program.

This group thoroughly reviewed the year's operation of the program,

and considered the possibilities for improving it.

Their recommendations were taken under advisement by the Department, administrative problems were worked out, and on June 16th Under Secretary Morse made the announcement of the modifications in the program for the 1955-56 year.

These changes are designed to permit more schools to do a more effective job of increasing consumption, and to eliminate some of the operating problems that limited the full development of the program during the 1954-55 school year.

In broad terms, the modifications for next school year are:

Participating schools will be reimbursed for all milk that is served to children as a "separate item" -- that is, in excess of the one-half pint that is served as a part of a Type A or B lunch under the National School Lunch Program.

State educational agencies will continue to administer the program locally, and will continue to be responsible for establishing rates of reimbursement for individual schools, within the maximum rates established by USDA. The maximum rate that the State may assign is 4 cents per half pint for schools serving Type A and B lunches under the National School Lunch Program, and 3 cents per half pint for all other schools.

School Reimbursement Important

The first of those changes is the most important. Last year, you'll remember, a milk-consumption "base" was used, as the starting point from which to determine the increase in milk consumption in a school. The normal consumption of milk by the children was determined for each school, and established as that school's base. Then reimbursement was made for all of the milk served to children in excess of that base.

Early announcement of these broad changes in the programs was made to enable State educational agencies to plan for next year's operation, well in advance of the fall opening of school. Detailed instructions to carry out these modifications will be announced later.

Mr. Morse explained that these modifications are designed to correct problems that school officials have encountered in the program, and thereby to enable them to extend it to even more schools and more children next year. The Acting Secretary said the progress which the program made during its first year of operation is a fine tribute to the excellent work done by school officials in extending it to so many schools in so short a period of time.

"With the improvements growing out of this year's experience," he declared, "and with a full school year's operation next year, the Special School Milk Program is certain to do an even better job of making more milk available to our school children."

Exterior Quality Important In Eggs

Ralph L. Baker

While interior quality is the most important factor in determining the grade of eggs, exterior defects such as odd shape and checked, weak, stained and dirty shells keep many eggs out of the top grades. Furthermore, although a high percentage of eggs are cleaned or sanitized before marketing, many of these eggs are downgraded because the job is not well done or because washing material deposits are left on shells.

These findings were particularly noticeable during a recent marketing research study made by Pennsylvania State University for the Market Organization and Costs Branch of the Agricultural Marketing Service. It was found that a substantial percentage of eggs, which would have graded "A" or better by U. S. Standards on interior quality alone, were dropped below that grade when both interior and exterior quality were taken into account. The study also revealed the reasons why this happened and indicated several things that could be done to reduce exterior defects that cause downgrading.

Interior Quality Seasonal

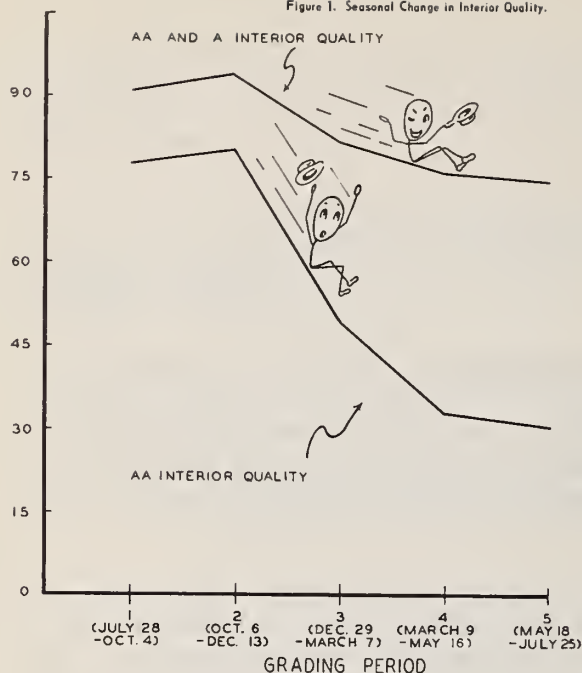
During the study, candling tests indicated that in the early laying months, August and September, about 74 percent of the large eggs delivered by some 90 producers at five different Pennsylvania plants were of AA interior quality. During the succeeding 10 weeks, from October to about the middle of December, 78 percent of these eggs were AA interior quality. However, beginning the first part of the calendar year, the interior quality of eggs declined rapidly. During January, February, and the first week of March, only 49 percent of the eggs were AA interior quality. As may be seen in Figure 1, the decline in quality continued to about 30 percent AA interior eggs in the May-July period. The interior quality of medium eggs was somewhat higher than large eggs during the early part of the laying year, but after about the first ten weeks of the study the percentage of AA interior quality eggs was about the same for both large and medium eggs.

Incidence of "Checks" Also Varies

The percentage of checked eggs reached a peak during the summer months. The total number of checked eggs was not indicated by the study, because some producers removed checked eggs at the farm. Nevertheless, the seasonal increase in percentage of checked eggs was rather definite. The lowest percentage was during the first two months of the calendar year.

PER CENT

Figure 1. Seasonal Change in Interior Quality.



From the middle of May through July the proportion of checks was highest, with an average of 6 percent. There was a slightly higher percentage of large blood and meat spots indicated by the candling during the latter part of the laying season. See Figure 2.

Producers Vary Considerably

The sample at each of the five plants was selected to include high quality, low quality and average quality producers according to their market grade history. The percentage of AA eggs delivered during the year by these producers varied from about 6 to 80 percent. The proportion of checked eggs ranged from less than 1 to about 10 percent. More than 1/3 of the 90 producers included in the study averaged more

than 18 cracked eggs per case of eggs sold. The percentage of stained eggs among the 90 producers ranged from practically none to about 36 percent. Dirty eggs ranged from none to 9 percent. Rejects, and these were mostly blood or meat spots which were too large for C eggs, ranged from a low of less than 1 percent to a high of more than 5 percent.

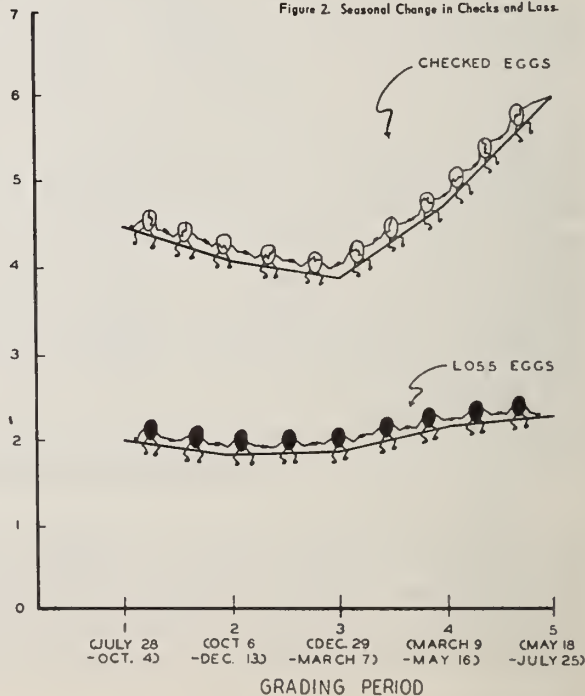
Brown-White Egg Differences

Eggs with brown shells were graded higher than those with white shells. The numbers of AA eggs per case were higher for both large and medium brown than for white eggs of the same sizes. The numbers of stained and checked eggs were higher for white eggs.

The higher grade assigned to the brown eggs was a matter of both higher candled quality and fewer exterior grade lowering faults. The white-brown egg differences were probably due both to real differences and to candling interpretation. Brown shells do not transmit light as well as white shells. Therefore, it is more difficult to see defects in a brown shelled egg than a white shelled one. About 80 percent of the brown eggs and about

PER CENT

Figure 2. Seasonal Change in Checks and Loss.



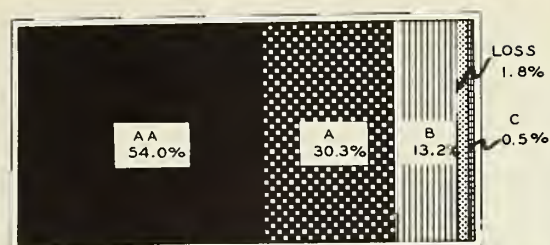


Figure 3.-Distribution of Qualities of Eggs When Only Interior Factors Are Considered

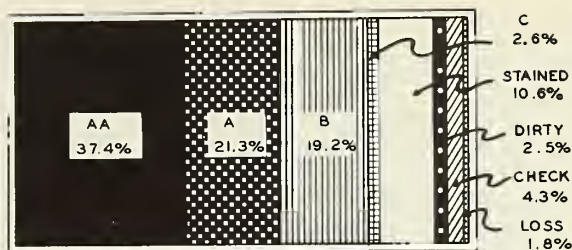


Figure 3.-Distribution of Qualities of Eggs When Both Interior and Exterior Factors Are Considered

50 percent of the white eggs were graded AA on interior quality.

Reasons Eggs Were in Lower Grades Than Interior Quality Grades

For the year, 54 percent of the eggs graded were of AA interior quality. See Figure 3. Thus, about 46 percent of all eggs did not make the top grade because of interior quality. However, it should be noted that 84 percent of the eggs were A quality or better, when only interior quality was considered. Only a little more than 37 percent of the eggs were of AA final quality and 21 percent A quality or about 58 percent of the eggs were put into a grade of A or better when both interior and exterior quality were considered.

About 16 percent of the eggs were placed in a lower grade because of shape and apparent shell texture defects. About 14 percent of the eggs were either stained or dirty. It is probable that there would be fewer stained and dirty eggs if the grading were done today. Apparently there has been a considerable change in methods of cleaning eggs during the last year. Also under the new U. S. Department of Agriculture grades the stained eggs would be placed in B or C grade depending upon the seriousness of the stain.

Factors Affecting the Number of Stained and Dirty Eggs

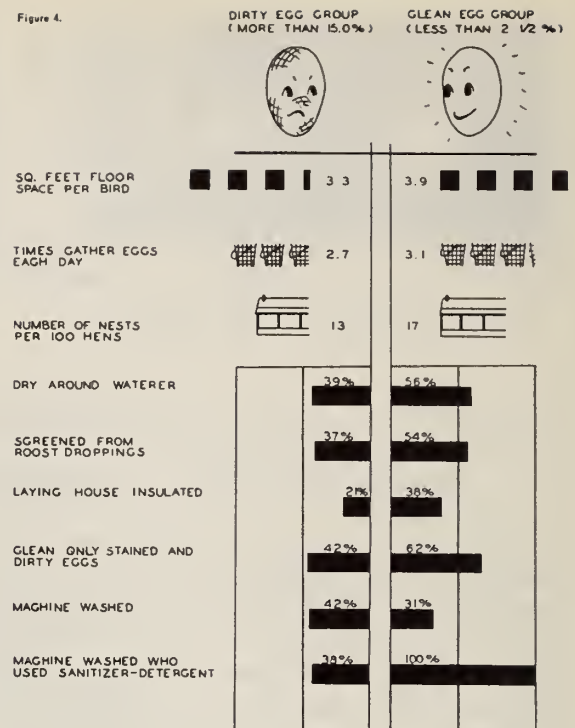
Since stained and dirty eggs were so important from a grade standpoint, practices which might result in variation in the number of clean eggs were studied. See Figure 4. There were 16 producers who marketed less than 2½ percent and 33 producers who marketed more than 15 percent stained and dirty eggs. For discussion purposes let's call these two, clean and dirty egg groups, respectively. The clean egg group marketed an average of about 1 percent stained and dirty eggs. The average for the dirty egg group was about 24 percent. If the producer did a good job of cleaning eggs, then there would be no point in looking at other factors which affect the cleanliness of the shell, except insofar as the dirtier an egg is, the more difficult it is to get clean.

However, several conclusions can be drawn from the study: (1) Smaller producers did as good a job of marketing clean eggs as larger producers. In fact, producers who marketed 10 cases or more per week had more stained and dirty eggs per case than producers who marketed 1½ or less cases per week. (2) Both groups of producers kept their hens confined either all

day or, in a few instances, the birds were turned out for a part of the day. (3) The dirty egg group had a smaller amount of floor space per hen. (4) There did not appear to be any particular differences in the kind of litter used. (5) The clean egg group did a better job of keeping the litter dry around the waterers and keeping hens from walking in the roost droppings. (6) More of the clean egg group had their laying houses insulated. (7) There did not appear to be any great difference in the kind of nesting material used. (8) The clean egg group had more nests per 100 hens and gathered eggs oftener. (9) More producers in the dirty egg group cleaned all of their eggs. About 31 percent of the clean egg group, compared to 42 percent of the dirty egg group, used machine washers.

This does not indicate that a good job was not done in washing eggs with machines. In fact, several producers with less than 1 percent stained and dirty eggs used machine washers. It does indicate that some producers were not using egg washing machines properly, or were allowing many of the eggs to get badly stained in the nests.

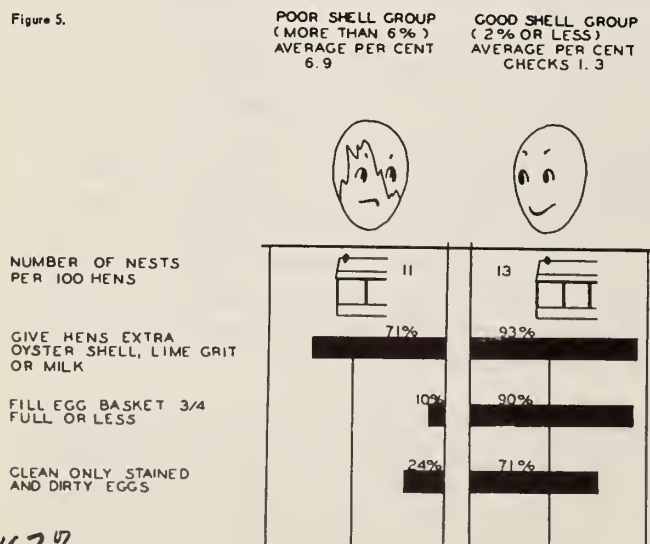
Figure 4.



Factors Affecting the Number of Checked Eggs Marketed

The producers were divided into four groups on the percentage of checked eggs marketed during the year. See Figure 5. The good shell group contained those producers who had 2 percent or fewer checks and the poor shell group those who had more than 6 percent checks.

Figure 5.



47%

Obviously, an important factor here was whether or not the producers took their checked eggs out before marketing and used them at home or marketed them in cases other than those examined in the study. However, there are some other factors which were important: (1) There was a higher percentage of white egg breeds in the poor shell group. (2) There was not much difference in the containers used for gathering eggs, but a large difference between filling practices. Only 21 percent of the good shell group

normally filled their egg baskets full compared to 90 percent for the poor shell group. (3) There was little difference in the average number of daily gatherings or in the out-breaks of disease during the year. (4) More of the good shell group provided extra oyster shell, lime grit or milk. (5) More of the good shell group fed commercial mashes compared to home mixed mashes. This may or may not be of any significance. (6) Only 21 percent of the good shell group cleaned all their eggs compared to 76 percent for the poor shell group. Fewer of the good shell group used mechanical washers, buffers or sorters. This latter difference stems from the fact that the good shell group was mostly small producers while the poor shell group was mostly large producers. But there were both large and small producers in each group.

U. S. Department of Agriculture
Agricultural Marketing Service
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